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B. P. NIKOL'SKIY'S WORK
IN ION EXCHANGE AND RADIOCHEMISTRY

B. P. Nikol'skiy was elected Corresponding Member of the Academy of Sciences USSR, in the speciality of radiochemistry, at a meeting of the Department of Chemical Sciences USSR. The meeting was held on 19-20 October 1954.

Nikol'skiy conducts research of a unique nature in a number of fields of physical chemistry. The principal line of research pursued by him is in experimental and theoretical work pertaining to the exchange of ions in heterogeneous systems. Nikol'skiy was the first to apply physicochemical methods of analysis in agricultural chemistry. On the basis of these methods he initiated fundamental work in agricultural chemistry, which is being continued by the school of investigators founded by him. Of considerable importance is the development by Nikol'skiy of many-sided methods for the investigation of electrolytes contained in soil solutions: the extensive and precise data obtained by applying these methods form the basis of the theory of ion exchange in soils that has been evolved by Nikol'skiy. One of the results of this work has been the subdivision of ion exchange phenomena into three fundamental types. Cases involving a pure adsorption mechanism and a pure chemical mechanism form the two extremes of Nikol'skiy's classification of ion exchange phenomena. A statistical and thermodynamic theory has been developed for the three types of ion exchange postulated in this system of classification. Nikol'skiy formulated a general equation which describes all cases of ion exchange. These investigations are of importance from the standpoint of the theory of the double layer, which has been expanded to cover nonmetal systems (the ion exchangers).

Of great interest from the scientific standpoint is Nikol'skiy's theory of the glass electrode, which is based on profound experimental research and on the

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theory of ion exchange developed earlier. In the majority of the investigations mentioned above, radiochemical methods were applied. Nikol'skiy is a recognized specialist in the application of these methods. A significant part in Nikol'skiy's work is played by the physical chemistry of natural waters. The application of more precise methods and in a number of cases of entirely new methods made it possible to establish that there is a correlation between the salt composition of natural waters and their physicochemical properties, particularly their p_H .

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